I claim:

1. A method for allocating frequencies in a frequency hopping spread spectrum communications link over which data is transmitted from a first transceiver to a second transceiver, the method comprising the steps of:

selecting a hop sequence that is stored in each of the first and second transceivers comprised of a plurality of frequency channels over which the first and second transceivers communicate;

identifying a frequency channel in the hop sequence as being unsatisfactory;

performing a frequency channel substitution by replacing the unsatisfactory frequency with an alternative frequency, in the hop sequence of the second transceiver;

transmitting an unacknowledged substitution command a first time by the second transceiver requesting that the first transceiver perform the frequency channel substitution in its hop sequence;

transmitting the unacknowledged substitution command a second time by the second transceiver requesting that the first transceiver perform the frequency channel substitution in its hop sequence.

2. The method of claim 1, in which the step of identifying a frequency channel in the hop sequence as being unsatisfactory is further comprised of the substep of detecting an error in data communicated over the unsatisfactory frequency channel during two consecutive hops on that channel.

3. The method of claim 1, in which the step of selecting a hop sequence is further comprised of the substeps of:

dividing the plurality of frequency channels into at least a first subset of channels and a second subset of channels, where each of the channels in the first subset are higher in frequency than each of the channels in the second subset;

permuting the channels within the first subset in a pseudo-random manner;

permuting the channels within the second subset in a pseudo-random manner;

selecting a hop sequence comprised of channels from the first subset and the second subset, such that two channels from a given subset are not adjacent to one another in the sequence.

4. The method of claim 1, in which the step of transmitting the substitution command a second time occurs on the frequency channel in the hop sequence that immediately follows that during which the substitution command was transmitted the first time.

5. The method of claim 1, in which the step of performing a frequency substitution is further comprised of the substeps of:

ranking a plurality of spare frequencies channels by channel quality;

selecting the highest-ranked spare frequency channel as the alternative frequency.

6. The method of claim 5, in which the substep of ranking the plurality of spare frequency channels is further comprised of the substeps of:

measuring the received signal strength on each spare frequency channel while no communications from the communications system are occurring thereon;

ranking the spare frequency channels in order of ascending received signal strength.

7. A method for generating a frequency hopping sequence in a frequency hopping spread spectrum communications system in which communications occur over a plurality of frequency channels, the method comprising the steps of:

dividing the plurality of frequency channels into a first subset of channels and a second subset of channels, where each of the channels in the first subset are higher in frequency than each of the channels in the second subset;

permuting the channels within the first subset in a pseudo-random manner;

permuting the channels within the second subset in a pseudo-random manner;

selecting a hop sequence comprised of channels taken alternately from the first subset and the second subset such that no two channels from the same subset are adjacent to one another in the sequence.

8. The method of claim 7, where the pseudo-random manner in which the first and second subsets are permuted is determined via a pseudo-random number generator that is seeded with a value unique to one or more devices of which the communications system is comprised.

9. A method for ranking the quality of frequency channels in a set of spare frequencies that are not incorporated within the hop sequence of a frequency hopping communications system, which method is comprised of the steps of:

measuring the received signal strength on each of the spare frequency channels;

ranking the spare frequencies in order of ascending received signal strength.

10. The method of claim 9, in which the received signal strength on each spare frequency channel is measured sequentially through the set of spare frequency channels, and the step of ranking the spare frequencies is comprised of the substeps of:

determining whether the received signal strength on a particular spare frequency channel is less than that measured on a previous spare frequency channel ranked immediately above the particular spare frequency channel in the set of spare channels;

switching the positions of the particular spare frequency channel and the previous spare frequency channel if the received signal strength on the particular spare channel is less than that of the previous spare channel.

11. A method for controlling the substitution of frequency channels in the hop sequence of a frequency hopping communications link comprised of a plurality of frequency channels, the method comprising the steps of:

identifying a frequency channel in the hop sequence that requires substitution;

determining a congestion control value indicative of the number of frequency channels in the hop sequence that have been identified as requiring substitution;

substituting the identified frequency channel with a different frequency channel when the congestion control value is less than a first threshold value;

implementing a hop sequence repair operation in which the entire hop sequence is conveyed over the communications link when the congestion control value exceeds the first threshold value.

12. The method of claim 11, which method is further comprised of the step of shutting down the communications link when the congestion control value exceeds a second threshold value, where the second threshold value is greater than the first threshold value.

13. A method for controlling the substitution of frequency channels in the hop sequence of a frequency hopping communications link comprised of a plurality of frequency channels, the method comprising the steps of:

identifying a frequency channel in the hop sequence that requires substitution;

determining a congestion control value indicative of the number of frequency channels in the hop sequence that have been identified as requiring substitution;

substituting the identified frequency channel with a different frequency channel when the congestion control value is less than a threshold value;

shutting down the communications link when the congestion control value exceeds the threshold value.

14. The method of claim 11, in which the step of substituting the identified frequency channel with a different frequency channel is comprised of the substep of transmitting, on two consecutive frequency hops, a command indicative of the frequency substitution required; and which method further includes the preceding steps of:

dividing the plurality of frequency channels into a first subset of channels and a second subset of channels, where each of the channels in the first subset are higher in frequency than each of the channels in the second subset;

permuting the channels within the first subset in a pseudo-random manner;

permuting the channels within the second subset in a pseudo-random manner;

selecting a hop sequence comprised of channels taken alternately from the first subset and the second subset such that no two channels from the same subset are adjacent to one another in the sequence.

15. The method of claim 12, in which the step of substituting the identified frequency channel with a different frequency channel is comprised of the substep of transmitting, on two consecutive frequency hops, a command indicative of the frequency substitution required; and which method further includes the preceding steps of:

dividing the plurality of frequency channels into a first subset of channels and a second subset of channels, where each of the channels in the first subset are higher in frequency than each of the channels in the second subset;

permuting the channels within the first subset in a pseudo-random manner;

permuting the channels within the second subset in a pseudo-random manner;

selecting a hop sequence comprised of channels taken alternately from the first subset and the second subset such that no two channels from the same subset are adjacent to one another in the sequence.

16. The method of claim 13, in which the step of substituting the identified frequency channel with a different frequency channel is comprised of the substep of transmitting, on two consecutive frequency hops, a command indicative of the frequency substitution required; and which method further includes the preceding steps of:

dividing the plurality of frequency channels into a first subset of channels and a second subset of channels, where each of the channels in the first subset are higher in frequency than each of the channels in the second subset;

permuting the channels within the first subset in a pseudo-random manner;

permuting the channels within the second subset in a pseudo-random manner;

selecting a hop sequence comprised of channels taken alternately from the first subset and the second subset. such that no two channels from the same subset are adjacent to one another in the sequence